



Water@Wayne
Seminar Series
Presents:

Dr. Pamela Templer,
Professor of Biology at
Boston University

Controls on Biogeochemical Cycling of Nitrogen and Carbon in Urban Ecosystems

Thursday, April 5, 2018
2:30 – 3:30 p.m.

Bernath Auditorium, Undergraduate Library
5155 Gullen Mall, Detroit, MI 48202

Rates of atmospheric nitrogen deposition are declining across much of the United States and Europe, yet they remain substantially elevated by almost an order of magnitude over pre-industrial levels and occur as hot spots in urban areas. We measured atmospheric inputs of inorganic and organic nitrogen in multiple urban sites around the Boston Metropolitan area, finding that urban rates are substantially elevated compared to nearby rural areas, and that the range of these atmospheric inputs are as large as observed urban to rural gradients. Our data show that a major consequence of this network design is that hotspots of nitrogen deposition are likely underestimated to a significant degree. A more complete determination of atmospheric nitrogen deposition and its fate in urban ecosystems is critical for closing regional nitrogen budgets and for improving our understanding of biogeochemical nitrogen cycling across multiple spatial scales. We also found that growing season soil respiration is dramatically enhanced in urban areas and represents levels of carbon dioxide efflux to the atmosphere of up to 72% produced by fossil fuel combustion within greater Boston's residential areas. As the scientific community moves rapidly towards monitoring, reporting, and verification of carbon dioxide emissions using ground based approaches and remotely-sensed observations to measure carbon dioxide concentrations, our results show that measurement and modeling of biogenic urban carbon dioxide fluxes will be a critical component for verification of urban climate action plans.

A reception will immediately follow the seminar.

The seminar is free and open to the public; registration is requested at <https://events.wayne.edu/>.